

Contribution to the knowledge of the Aphididae (Hom.) I.

by

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The following is the first of a series of articles, dealing with the Aphididae, more specially the Dutch ones. Comparatively little has been published on the Aphidofauna of this country. VAN DER GOOT in his classic work: Beiträge zur Kenntnis der Holländischen Blattläuse, 1915, describes 145 members of this family, moreover 8 species of the *Chermesidae* (5). In 1927 FRANSSEN in his thesis disentangles the complex of those black members of *Aphis* L. s. s., which possibly could be confused with *Aphis fabae* SCOP. (2). This paper was followed by a second one, enlarging the field to the allies of *Aphis craccae* L. etc. (3). FRANSSEN described 8 species new to the fauna, some of doubtful validity. Afterwards we hope to give a critical review of the older Dutch literature.

1. The name ***Dactynotus picridis*** (FABR., 1775) (1).

In Fauna Suecica, Ed. I, 1743, p. 217, n. 713, LINNAEUS describes an Aphid from *Serratula*, which he calls *Aphis serratulae*.

The diagnosis is given as follows:

"Corpus fuscum: punctorum elevatorum ordinibus sex in dorso. Alarum rudimenta, appendiculi, pedes, antennae nigri, femora versus basin alba."

The same Aphid is mentioned in Systema Naturae, Ed. X, 1758, p. 735, n. 16, as *Aphis cirsii*, the hostplant having been transferred to the genus *Cirsium*.

From *Cirsium* in Europe only two *Dactynotus* species with

black legs and pale femora-base are known: *D. jaceae* (L., 1758) and *D. picridis* (F., 1775). Aphidologists (SCHOUTEDEN, 1906 (20), THEOBALD, 1926 (23)) used to place *Aphis cirsii* L. under the synonyms of *Macrosiphum jaceae* (L., 1758), incorrectly however on the following reasons:

- a. *D. jaceae* (L.) has not a brownish-red body, but is blackish brown.
- b. The base of the femora in *D. jaceae* are not "alba", but yellowish - to pale brown.

In our opinion *Aphis cirsii* L. is the species we know as *Dactynotus picridis* (F., 1775). The latter name should be dropped and be replaced by *Dactynotus cirsii* (L., 1758).

2. On ***Aphis serratulae*** AUCTIONE, nec LINNÉ.

The first one after LINNAEUS to describe an *Aphis serratulae* was SCHRANK, 1801 (21). If this is a mature specimen, it probably is a *Brachycaudus* v. D. G. In 1843 KALTENBACH gives an excellent description of an *Aphis serratulae*, with the authors name "LINN." (7). KALTENBACH's species, which we have found, differs (as his description shows) from the LINNEAN in having the tibiae partly yellow. The only notice we know off in litterature regarding KALTENBACH's species is found in „Contributions à l'étude des Aphididae de France" by the late Dr. GAUMONT (4). On Pl. XXXI, fig. 67, of his work is given a figure of a "*Macrosiphum* sp.?", which clearly is the same as our photomicrograph shows, i. e. *Aphis serratulae* KALT. As *serratulae* KALT. is homonymous with *serratulae* SCHRK., we propose as new name for KALTENBACH's *Aphis serratulae*: ***Dactynotus marcatus***.

A description of the Apt. viv. fem. follows here.

Dactynotus marcatus nom. nov.

Colour see KALTENBACH, pp. 25, 26.

Morphological characters:

Body elongate, large, with an abnormal grouping of hairs, which have scleroites¹⁾ at their bases. Each side of the medianline on each abdominal segment is a group of three to four hairs, placed in a triangle or a square. The scleroites of these hairs usually grow together and form a large

¹⁾ This word we propose for the small sclerotised spots at the basis of the tergal hairs of several *Aphididae*.

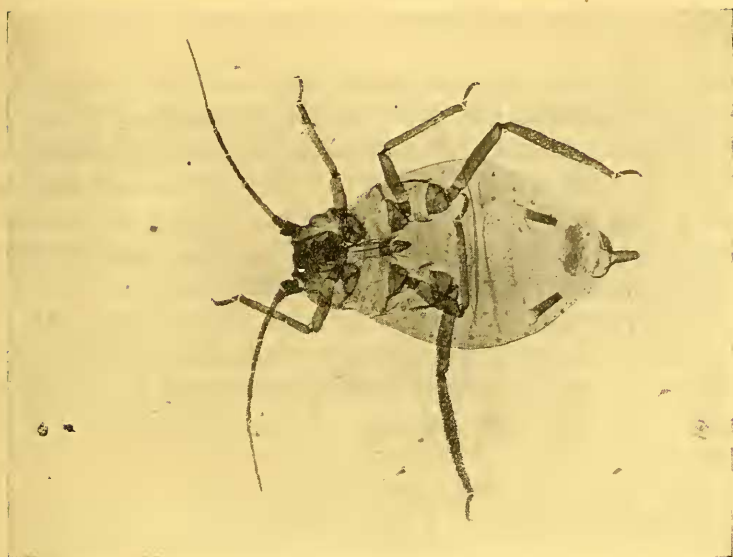


Fig. 1a.

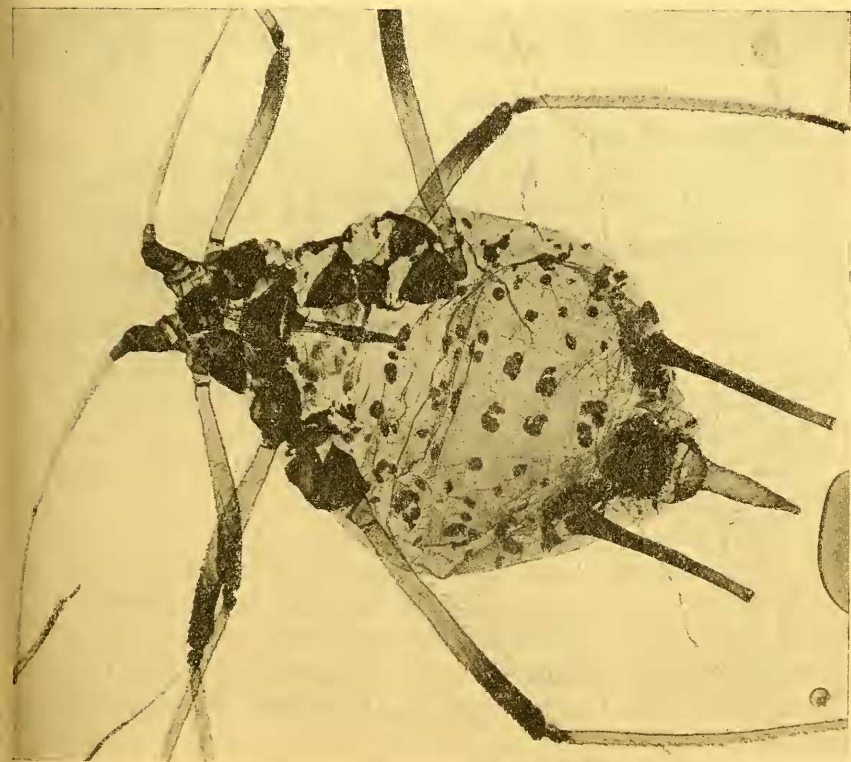


Fig. 1b.

black plate. Frontal tubercles well developed, median stemma small, front rather broad. Antennae longer than the body, IIIrd segm. with 22—30 rhinaria on the basal half. Antennal hairs $\frac{3}{4}$ — $\frac{4}{5}$ \times the diameter of IIIrd segm. Rostrum reaching the 3rd pair of coxae, apical joint 3 \times as broad. Siphunculi long, straight, to nearly $\frac{1}{4}$ \times the body's length; apex reticulated, remainder finely imbricated.

Cauda very long, acuminate, with over 20 hairs, $\frac{3}{5}$ \times the siphunculi. In cleared specimens the head and prothorax are brown, abdomen with black scleroites (vide photograph), legs with black distal half of femora and tips of tibiae, siphunculi black.

Body length 4 — 4.5 mm.

Measurements of one specimen:

Length of body 4.42 mm.

» » ant. ? »

» » siph. 1.10 »

» » cau. 0.70 »

Proportion of ant. segments as: $\frac{100}{III} : \frac{71}{IV} : \frac{57}{V} : \frac{(13 + ?)}{VI}$

Rhin. on III ant.: 27 and 30.

(Types and cotypes in the authors collection).

Collected by Dr. C. FRANSSEN on *Cirsium arvense* at Heteren (Lower-Betuwe). Date 14-VI-'27.

3. *Macrosiphoniella pseudolineata* sp. nov.

Diagnosis.

Apt. viv. fem.

Colour: Green, with a darker green dorsal line. Eyes reddishbrown. Antennae pale brown, black towards the apex. Legs yellowish green to ginger yellow with black apices of tibiae and tarsi. Siphunculi green, black towards the apex (apical half brown to black). Cauda green.

Morphological characters.

Body elongated, as in *Acyrtos. pisi* KALT. Body hairs about 0.062 mm. long, placed in the common order, without scleroites. Frontal tubercles well developed, median stemma inconspicuous. Antennae longer than the body. The IIIrd segment with 11—16 (aver. 13.4) rhinaria on the basal

part, placed in an irregular group. Antennal hairs $\frac{7}{8}$ — $1\frac{1}{6}$ \times diameter of IIIrd ant. segment. Rostrum reaching to half way the 2nd and 3rd pair of coxae, apical segment twice as long as broad. Siphunculi narrow in the middle, dilated towards base and flange, reticulated over $\frac{3}{7}$ — $\frac{2}{5}$ of their length, $1\frac{1}{2}$ — $2 \times$ as long as the cauda, $\pm \frac{2}{9}$ of the body's length. Cauda long, blunt, with more than 24 hairs. Length of body 3.7—4.5 mm.

Measurements of one specimen:

Length of body 4.10 mm.

» » ant. 4.69 »

» » siph. 0.93 »

» » cau. 0.52 »

Prop. of ant. segments as: $\frac{100}{III} : \frac{79}{IV} : \frac{60}{V} : \frac{(17+72)}{VI}$.

Rhin. on III of ant.: 11 and 12.

Al. viv. fem.

Colour: Head and mesothoracal lobes yellowish brown. Abdomen green, somewhat greyish with a darker green spinal line. Eyes reddish brown, antennae brown; Siphunculi brown with green base, cauda green.

Morphological characters.

IIIrd ant. segment with 50—59 rhinaria over its whole length, mainly on its inner side. Rostrum to 2nd pair of coxae, apical segment $1\frac{1}{2} \times$ as long as broad. Siphunculi very thin, distally reticulated over nearly $\frac{1}{2}$ of their length, nearly $\frac{1}{4}$ of the body's length. Other characters as in the Apt. viv. fem. (Description after one specimen!)

Measurements of one specimen:

Length of body 3.30 mm.

» » ant. ? »

» » siph. 0.80 »

» » cau. 0.42 »

Prop. of ant. segments as: $\frac{100}{III} : \frac{91}{IV} : \frac{70}{V} : \frac{(23+?)}{VI}$.

Rhin. on III of ant. 50 and 59.

Oviparous female.

Colour: much like in the Apt. viv. fem., more yellowish green.

Morphological characters.

IIIrd ant. segment with 11—15 (aver. 12.4) rhinaria on basal part. Siphunculi more slender than in apt. viv. fem., $\frac{1}{5}$ of the body's length. Cauda shorter, blunt. On the hind tibiae, which are basally a little enlarged, about 30—70 sensoria.

Length of body 3.5—4.2 mm. Other characters as in the Apt. viv. fem.

Measurements of one specimen:

Length of body 3.53 mm.

» » ant. ? »

» » siph. 0.74 »

» » cau. 0.37 »

Prop. of ant. segments as: $\frac{100}{III} : \frac{107}{IV} : \frac{78}{V} : \frac{(23 + ?)}{VI}$.

Rhin. on III of ant.: 11 and 12.

Sensoria on hind tibiae: 30 and 34.

Apterous male.

Colour: Darker green than in apt. viv. fem. Head dirty brown. Siphunculi green, with the distal $\frac{3}{4}$ darkening towards the apex. Antennae dark brown to nearly black.

Other characters as in Apt. viv. fem.

Morphological characters.

Body elongated, narrow, somewhat linear. Antennae much longer than the body, rhinaria as follows: IIIrd segm. with 36—54 rhin. (aver. 44.1), IV with 9—18 (aver. 14.5), V with 9—22 (aver. 15.8), those on the IVth segment for the larger part on the distal part of the segment. Siphunculi very thin, nearly cylindrical, $2 \times$ the cauda, $\frac{2}{9}$ of the body's length. Cauda short, apex rounded.

Genitalia strongly developed; valvae with rather long hairs. Length of body 2.40—2.80 mm.

Measurements of one specimen:

Length of body 2.73 mm.

» » ant. 4.33 »

» » siph. 0.61 »

» » cau. 0.28 »

Prop. of ant. segments as: $\frac{100}{III} : \frac{89}{IV} : \frac{74}{V} : \frac{(22 + 90)}{VI}$.

Rhin. on III of ant.: 42 and 54, IV: 10 and 8, V: 7 and?
All types in the authors collection!

Biology.

This insect nearly always is found on the lower leaves of *Tanacetum vulgare* L. Fundatrices⁷ were not yet observed. The second generation develops toward mid June (1929, late winter!) containing both apterous and alate forms. The alate females climb towards the top of the stems and then are often found between colonies of the other species which inhabit the Tansy. Occasionally colonies were mixed up with those of *Dactynotus tanaceticola* (KALT. 1843). Through the summer the insect may be found on the same plant, alatae being rare. In the autumn, the beginning of October (1928, 1929) the sexuales develop on the lower leaves and are then found in numbers crawling on the crumpled leaves, upon which the eggs are deposited. Copulation was observed in Petridishes, the copula lasting some minutes. The eggs, when freshly deposited, are glaucous, somewhat transparent and shiny. The colour soon darkens, this process beginning from one pole, till after some time the colour is shiny black.

Localities: Deventer, Autumn 1928 and Spring 1929, Lith (N.-Br.), Summer and Autumn 1929 (D. H. R. L.).

Synonymy: F. WALKER in: Descriptions of Aphides, Ann. Mag. Nat. Hist., Vol. 2, 1849, records *Aphis ulmariae* "SCHRK." (= *Macr. cholodkovskyi* MORDV.) from a large number of foodplants. According to his list of foodplants it is most probable that he observed a number of different species. Our opinion is, that his record of *A. ulmariae* from *Tanacetum* bears upon *Macrosiphoniella pseudolineata* H. R. L., that from *Artemisia* on *M. lineata* v. d. G.

As a synonym we can place: *Aphis ulmariae* WLK. p.p., quoad de Aphidibus de Tanaceto agitur.

4. On *Macrosiphoniella lineata* (v. d. G.).

Through the kindness of Dr. P. W. MASON, Bureau of Entomology, Washington, we received a number of slides of American *Macrosiphini*. Among these was a slide of

Macrosiphoniella ludoviciana (OESTL.), collected by OESTLUND. An examination showed the species closest allied to the European *Macr. lineata* (V. D. G.), the differences in fact being so small, that we propose to place *M. lineatum* as a subspecies to *M. ludoviciana* (OESTL.). The differences are the following:

<i>M. lineata</i> (V. D. GOOT).	<i>M. ludoviciana</i> (OESTL.) (22).
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Apt. viv. fem. 3—13 rhin. (aver.: 6)	12—17 rhin. (aver.: 13)
in one row.	in an irregular grouping (Calif. 6—14).

Without waxsecretion.	With pulverulent wax-powder.
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Antennae green or yellowish-brown, with black or brown apex.	Antennae black.
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Al. viv. fem. 20—30 rhin.	38—61 rhin. (SOLIMAN).
Green, without white powder.	"Covered with white powder resembling very much the host-plant in colour". (SOLIMAN) (19).

Antennae pale brown with black apex.	Antennae black.
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5. The biology of *Amphorophora rhinanthi* (SCHOUTEDEN) (19).

In August 1929 this species was quite common at Lith (N.-Br.) in the calices of *Alectorolophus maior*, which plant grows in numbers along the Meuse. In the middle of August alate females appeared, which flew away. On 28th August, while examining a number of plants of *Ribes nigrum*, we found the lower leaves covered with the alate females of the mentioned species. Oviparae were mature already then. These are very marked by their large black dorsal spot, so that confusion is impossible. In the middle of September alate males developed on *Alectorolophus*, but owing to lack of time their biology has not been traced. The oviparae exactly agree with the description given by THEOBALD for

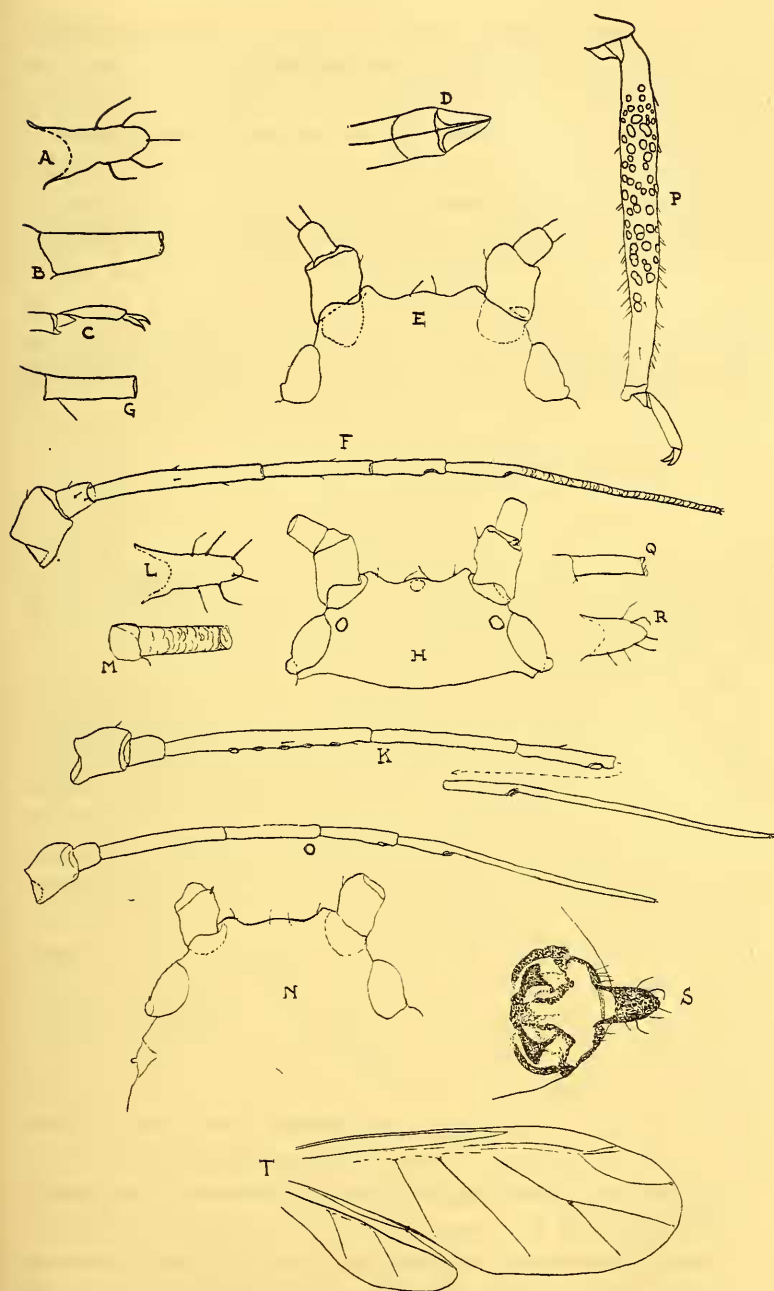


Fig. 2.

those of *Amph. britteni* THEOB. (23), and we have not the least doubt, that *Amphorophora rhinanthi* (SCHOUTEDEN) forms a part of the cycle of *Amph. britteni* (THEOB.). As SCHOUTEDEN's name is the elder, *Amph. britteni* (THEOB.) must be placed under the synonyms of the first name. Probably *Rhopalosiphoninus tuberculatus* THEOB. (24) is a gynopara of *Amph. rhinanthi* (SCHOUTEDEN), the number of rhinaria varying in this form of the species from 70—106 on IIIrd segm., 13—32 on IVth, 0—3 on Vth. All characters given by THEOBALD are applicable to *rhinanthi* (SCH.). Personally we found gynoparae of this species on a number of different plants, some with first or second instar larvae.

6. *Toxoptera nigerrima* sp. nov.

Diagnosis.

Apt. viv. fem.

Colour: black or blackish brown. Eyes blackish brown. Antennae black. Legs black, tibiae except apex dark brown, the latter black. Siphunculi and cauda black.

Morphological characters.

Body rather flat and elongated, with short hairs and inconspicuous hexagonal reticulation of the cuticula, formed by minute spines. Antennae about $\frac{2}{3}$ of the body's length, with very few, short hairs, the length of which is about $\frac{1}{3}$ of the diameter of III ant. Proportion of segments see below. Cauda rather long, elongated, blunt, with a variable number of hairs (2 pairs of lateral hairs + one dorso-apical = $\frac{2}{2} + 1$, further $\frac{3}{2} + 1$, $\frac{3}{3} + 0$ and $\frac{3}{3} + 1$). Siphunculi short, their basal diameter $\frac{1}{3}$ of their length, nearly cylindrical, in some specimens faintly constricted before the apex, as long or slightly shorter than the cauda and about twice the hind tarsi in length. Rostrum reaching the second pair of coxae, apex short, that of a typical grass-feeder (vide *Sipha glyceriae* (KALT.), *Macrosiphum* (*Sitobion*) *avenae* (FABR., 1775).

Marginal tubercles on prothorax and abdominal segments I and VII, small but prominent.

Cleared specimens show only the head chitinised, moreover a row of black sclerites with polygonal facets on the margin of the abdomen.

Measurements of one specimen:

Length of body 1.97 mm.

» » ant. 1.13 »

» » siph. 0.18 »

» » cau. 0.18 »

Prop. of ant. segments : $\frac{100}{III} : \frac{62}{IV} : \frac{43}{V} : \frac{(38 + 120)}{VI}$.

Al. viv. fem.

Colour (after one specimen found dried between the apterae): head and thorax black, abdomen very dark, probably blackish green. Antennae black, legs as in apterous form. Siphunculi and cauda black:

Morphological characters.

Antennae about $\frac{3}{4} \times$ the length of body, III with 5—7 rhinaria, placed in one row over its whole length, Hairs as in apterae. Proportion of segments see below. Cauda like that of the apterous form, hairs $\frac{3}{3} + 1$. Siphunculi cylindrical, shorter than the cauda. Rostrum broken off. Tubercles?

Cleared specimens show the head and thorax to be black, the usual sclerites and a row of marginal spots around the stigmata black. Wings with typical *Toxoptera* venation.

Measurements of one specimen:

Length of body 1.88 mm.

» » ant. 1.35 »

» » siph. 0.14 »

» » cau. 0.17 »

Prop. of ant. segments : $\frac{100}{III} : \frac{72}{IV} : \frac{46}{V} : \frac{(36 + 124)}{VI}$.

Rhin. on III ant.: 5 and 7.

Ovipara.

Colour: as in the apterae, only the hind tibiae different, their colour being blackish.

Morphological characters.

Body of the same form as in apterous form, ornamentation of skin the same. Antennae about $\frac{3}{4} \times$ the body, hairs as in apt. viv. fem. Cauda as in apt. viv. fem. Siphunculi shorter than the cauda. Caudal hairs slightly more numerous, e.g. $\frac{4}{5} + 0$. Hind tibiae thickened very distinctly, with about

70 large, well developed sensoria over their whole length, but most on the basal $\frac{2}{3}$ part. Rostrum reaching just past the second pair of coxae.

Marginal tubercles and chitinisation as in aptera.

Measurements of one specimen:

Length of body 1.52 mm.

» » ant. 1.19 »

» » siph. 0.14 »

» » cau. 0.17 »

Prop. of ant. segments: $\frac{100}{III} : \frac{77}{IV} : \frac{67}{V} : \frac{(47 + 166)}{VI}$.

Sensoria on hind tibiae: 67 and 81.

Alate male.

Colour: Head and thorax black, abdomen blackish green. Antennae black. Legs black, the middle area of the tibiae yellowish brown. Siphunculi and cauda black,

Morphological characters.

Antennae as long as body. Rhinaria distributed as follows: III—16 and 17, IV—15 and 16, V—8 and 10, not in one row. (The other specimen caught shows: III—13, and 13, IV—11 and 12, V—7 and 8 rhin.). Hairs as in apt. Prop. of segments see below. Cauda rather short, triangular, blunt, as long as the siphunculi, hairs $\frac{2}{3} + 1$. Siphunculi short, imbricated, flangeless. Rostrum and marginal tubercles as in apterae, chitinisation as visible in cleared specimens as in virgogeniae alatae. Wings with typical *Toxoptera*-venation.

Measurements of one specimen:

Length of body 1.29 mm.

» » ant. 1.29 »

» » siph. 0.11 »

» » can. 0.10 »

Prop. of ant. segments: $\frac{100}{III} : \frac{74}{IV} : \frac{57}{V} : \frac{(29 + 101)}{VI}$.

Rhin. number and distribution: see above.

Cotypes of apt. viv. females in the collection of Mr. F. LAING (Brit. Mus. Nat. Hist., S.K., London), all other types in the authors collection.

Biology.

This dull black *Toxoptera* was first found on the lefth border of the Meuse, on *Triticum repens* L. (infesting the upperside of the leaves) growing against the dyke. This colony, which was found about 15th August 1929 died, without forming sexuales. Sept. 8th one vivip. al. was found in this colony. Towards the end of Sept. the insects were found in large numbers, infesting an undetermined grass, probably *Festuca* sp., this time on the right border. The first sexual forms were observed on October 2nd, one male and two oviparous females in one colony. The sexuparae are apterous. A week after, a number of oviparae were caught, only one male more. Copulation and oviposition have not been observed.

Locality: Lith (N.-Br.), Holland.

Note. We have not been succesful in tracing this species to any known description. *Toxoptera scirpi* PASS. (16) (= *Toxoptera typhae* LAING (8)?!) has the cornicles twice as long as the cauda. The closest allied species is *Toxoptera graminum* RONDANI (18), but the colour at once separates it.

EXPLANATION OF FIGURES.

Fig. 1. a.

Photomicro. of *Dactynotus marcatu*s H. R. L.
(24 X). Apt. viv. fem.

Fig. 1. b.

Photomicro. of *Toxoptera nigerrima* H. R. L.
(30 X). Ovip. fem.

Fig. 2.

Toxoptera nigerrima H. R. L.

A—F. Apt. viv. fem.

A. Cauda.

B. Siphunculus.

C. Apex of tibia with tarsus.

D. Apex of rostrum.

E. Head.

F. Antenna.

G—K. Al. viv. fem.

- G. Siphunculus.
- H. Head.
- K. Antenna.
- L—P. Ovip. fem.
- L. Cauda.
- M. Siphunculus.
- N. Head and prothorax with tubercle.
- O. Antenna.
- P. Hind leg with sensoria.
- Q—T. Al. male.
- Q. Siphunculus.
- R. Cauda.
- S. Apex of abdomen with genitalia.
- T. Wings.
- A—S. $\times 68$, T. $\times 275$.

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